

COURSE OUTCOME

(1) GENERALLY

SCHOOL	HEALTH & WELFARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETOLOGY		
LEVEL OF EDUCATION	UNDERGRADUATE		
COURSE CODE	7031-7032	SEMESTER OF STUDIES	7th
COURSE TITLE	ENZYMATIC DERMATOTHERAPY		
INDEPENDENT TEACHING ACTIVITIES <i>in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.</i>		WEEKLY TEACHING HOURS	CREDIT UNITS
Lectures, Laboratory Exercises		3L + 2LE	7
<i>Add rows if needed. The teaching organization and the used teaching methods are described in details in 4.</i>			
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Skills Development</i>	SE		
PREREQUISITE COURSES:			
LANGUAGE OF TEACHING AND EXAMS:	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS			
ELECTRONIC COURSE PAGE (URL)			

(2) LEARNING RESULTS

<p>Learning Results</p> <p><i>The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.</i></p> <p><i>Refer to Appendix A.</i></p> <ul style="list-style-type: none"> • <i>Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Summary Guide for writing Learning Outcomes</i>
<p>Aim and objective of the course: The use of proteolytic enzymes to treat unwanted hair growth. The study of proteolytic enzymes in relation to their penetration into the hair follicle, the study of how enzymes act on hair regenerative cells, the proteins that are found in small amounts and are necessary for the survival of cells.</p> <p>Upon the successful completion of this educational module students are expected to be able to:</p>

- know the method of enzymatic treatment of unwanted hair growth with proteolytic enzymes
- identify the type of hair growth, the amount of enzyme and how the enzyme will be used
- become familiar with the methods of treating unwanted hair growth depending on the etiology that creates the increased hair growth

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course?

Research, analysis and synthesis of data and information, using the necessary technologies
Adaptation to new situations
Decision making
Autonomous work
Teamwork
Working in international environment
Work in interdisciplinary environment
Production of new research ideas

Project design and management
Respect for diversity and multiculturalism
Respect for the natural environment
Demonstration of social, professional and moral responsibility and sensitivity in gender issues
Exercising criticism and self-criticism
Promoting free, creative and inductive thinking
 ...
Others
 ...

Autonomous work

Teamwork

Working in international environment

Work in interdisciplinary environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

(3) COURSE CONTENT

Theoretical Part of the Course

1. Anatomy and physiology of the skin. Generally about the hair.
2. Circular activity of the hair follicle. Hair regenerative cells and their location. Hair specificity by body areas.
3. Proteins - Enzymes. Characteristic properties of enzymes and their mode of action.
4. Classification of enzymes, allosteric modifiers. Enzyme analysis, how they work, enzyme kinetics.
5. Inhibition of enzyme reactions, pH effect, enzyme reaction rate.
6. Proteolytic enzymes with emphasis on trypsin, papain, chymotrypsin. Action of proteolytic enzymes with emphasis on the treatment of unwanted hair growth and ways of penetration.
7. **Skin thresholds**, how substances penetrate the skin. Iontophoresis as method, the device and ways and means of its use in the treatment of unwanted hair growth with enzymes.
8. Penetration of enzymes at different concentrations and for different iontophoresis enzymes.

9. Skin characteristics in the treatment of unwanted hair growth.
10. Pain and how to deal with it.
11. Conditions for permanent hair removal.
12. Experimental studies on the action of proteolytic enzymes on the skin of experimental animals.
13. Basic knowledge about transgenic mice, effect of proteolytic enzymes and results at the histological level of the skin.

Laboratory Part of the Course

1. Demonstration of the enzymatic method for the treatment of unwanted facial hair.
2. Learning the enzymatic method of treating unwanted hair growth in every skin type.
3. Enzymatic method of removing the unwanted hair growth, depending on the quality and the color of the hair.
4. Enzymatic method of removing the unwanted hair growth in case that the increased hair growth is due to a hormonal problem
5. Application of enzymatic method after hair removal in hormone-dependent areas with methods of temporary treatment of unwanted hair growth and idiopathic etiology.
6. Application of enzymatic method after hair removal in hormone-dependent areas with methods of temporary treatment of unwanted hair growth and hormonal etiology.
7. Application of the enzymatic method in non-hormone dependent areas..
8. Application of the enzymatic method after the use of adhesive preparations.
9. Application of the enzymatic method without iontophoresis in hormone-dependent regions.
10. Application of the enzymatic method without iontophoresis in non-hormone-dependent regions.
11. Combinations of methods of permanent treatment of unwanted hair growth with the enzymatic one.
12. Application of the enzymatic method in combination with the use of Laser - IPL. Protocol implementation. Effectiveness.
13. Comparative study of the application effectiveness, based on laboratory recordings.

(4) TEACHING AND LEARNING METHODS - EVALUATION

COURSE DELIVERY METHODS <i>Face to face, distance education, etc..</i>	FACE TO FACE	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>Use of I.C.T. in Teaching, Laboratory Education, iCommunication with students</i>	<ul style="list-style-type: none"> Use of I.C.T. in Teaching 	
TEACHING ORGANIZATION <i>The way and methods of teaching are described in detail.</i> <i>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies, artwork, creation, etc.</i> <i>The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards</i>	Activity	Semester Workload
	Lectures-Presentations using audiovisual media	90
	Writing Study	30
	Laboratory Exercises	90
Total course	210	
STUDENT EVALUATION <i>Description of the evaluation process</i> <i>Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination, Public Presentation, Public Presentation, Laboratory Exercise, Clinical Examination of Patients, Artistic Interpretation, Other / Others</i> <i>Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.</i>	EVALUATION LANGUAGE: Greek EVALUATION METHODS: THEORETICAL PART: Written final examination (100%) which consists of: <ul style="list-style-type: none"> Essay Development Questions Multiple Choice Test Short Answer Questions LABORATORY PART: 50% Written examination (Multiple Choice Test, Short Answer Questions) 50% Laboratory Examination	

(5) RECOMMENDED BIBLIOGRAPHY

<p>Greek</p> <ol style="list-style-type: none"> 1. Πρωτόπαπα Ε., Ενζυμική Αποτρέχωση, Εκδόσεις ΟΜΒΡΟΣ 1997. 2. Πρωτόπαπα Ε., Φυσιοπαθολογία και θεραπευτική διαταραχών της τριχοφυΐας, εκδ. Παπαζήσης 2004.
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3. Πρωτόπαπα Ε., Νεότερες απόψεις όσον αφορά την εντόπιση των αναγεννητικών κυττάρων της τρίχας, Επιθεώρηση Κλινικής Φαρμακολογίας και Φαρμακοκινητικής 1994;12:181
4. Karlson, Doenecke, Koolmann, Βιοχημεία, εκδόσεις Λίτσας, Αθήνα 1996.
5. Zubay, Parson, Vance, Αρχές Βιοχημείας, εκδόσεις Πασχαλίδης, 1999.

Foreign language

1. Fundamentals of Enzymology, Price, Stevens, Oxford University Press, 1999.
2. Poteases New Perspectives, Vito Turk, εκδόσεις Birkehauesser, 1999.
3. Biotechnological Applications of Proteins and Enzymes: edited by Zvi Bohak and Nathan Sharon